WHAT IS CLAIMED IS:

1. A power down system for an integrated circuit that enables a power down mode to be maintained for a predetermined time; said power down system comprising:

an oscillator;

a low power oscillator;

at least one environmental sensor; and

an oscillator control circuit controlling both said oscillator and said low power oscillator and receiving data from said at least one environmental sensor; said oscillator control circuit including a real time counter; said oscillator control circuit being so configured that said oscillator is energized when said oscillator control circuit is in a normal mode; said oscillator control circuit being so configured that:

when a reset signal is received:

environmental data is acquired by said oscillator control circuit and stored in a first memory; and

said oscillator control circuit measures an oscillation frequency of said low power oscillator and stores the frequency in a second memory;

when a power down signal is received:

environmental data is acquired by said oscillator control circuit and compared with the stored environmental data;

should the acquired environmental data differ from the stored environmental data by at least a predetermined tolerance, said oscillator control circuit measures an oscillation frequency of said low power oscillator and overwrites the data contained in the second memory;

said oscillator control circuit uses the oscillation frequency of said low power oscillator stored in the second memory

to set said real time counter so as to maintain the power down mode for the predetermined time, and

said oscillator control circuit turns off said oscillator and uses said low power oscillator for the duration of the power down.

2. The power down system recited in claim 1, wherein said oscillator is a crystal oscillator.

3. The power down system recited in claim 1, wherein said low power oscillator is selected from the group consisting of relaxation oscillators, ring oscillators and RC oscillators.

4. The power down system recited in claim 1, wherein said low power oscillator includes a Schmitt trigger oscillator.

5. The power down system recited in claim 1, wherein said at least one environmental sensor is selected from the group consisting of temperature sensors, IC process variation sensors and voltage sensors.

6. The power down system recited in claim 1, wherein said oscillator control circuit further includes a second real time counter; and wherein, when a power down signal is received, said oscillator control circuit sets said second real time counter using the measured oscillation frequency of the low power oscillator so that said oscillator control circuit may turn on the oscillator before the power down is terminated to allow an oscillation frequency of said oscillator to stabilize.

7. A power down method for an integrated circuit that enables a power down mode to be maintained for a predetermined duration; said integrated circuit including an oscillator, a low power oscillator, at least one environmental sensor, standard circuitry and an oscillator control circuit having a real time counter, memory and controlling both the oscillator and the low

power oscillator and connected to the at least one environmental sensor; said power down method comprising:

measuring initial environmental data;

measuring an initial oscillation frequency of the low power oscillator and storing it in memory;

receiving a power down signal;

measuring environmental data and comparing with the initial environmental data;

should the environmental data differ from the initial environmental data by at least a predetermined tolerance, measuring an oscillation frequency of the low power oscillator and overwrite the initial oscillation frequency in memory;

setting the real time counter as a function of the oscillation frequency in memory so as to maintain the power down mode for the predetermined duration; and

turning off the oscillation of the oscillator and the standard circuitry for the duration of the power down mode, as determined by the real time counter.

8. The power down method recited in claim 7, wherein said initial environmental data measuring act includes transferring environmental data from the at least one environmental sensor to the oscillator control circuit.

9. The power down method recited in claim 7, wherein said environmental data measuring act includes transferring environmental data from the at least one environmental sensor to the oscillator control circuit.

10. The power down method recited in claim 7, wherein the predetermined duration of the power down mode is fixed.

11. The power down method recited in claim 7, wherein the predetermined duration of the power down mode is supplied within the power down signal.

12. The power down method of claim 7, wherein said initial oscillation frequency measuring act includes shutting down the standard circuitry of the integrated circuit while the measurement of the initial oscillation frequency is done.

13. The power down method of claim 7, wherein said oscillation frequency measuring act includes shutting down the standard circuitry of the integrated circuit while the measurement of the oscillation frequency is done.

14. The power down method of claim 7, wherein the oscillator control circuit includes a second real time counter; said method including :

setting the second real time counter using the oscillation frequency of the low power oscillator to a duration shorter that the predetermined duration of the down time;

when the shorter duration expires, turning on the oscillator of the integrated circuit to allow an oscillation frequency thereof to stabilize;

when the predetermined down time duration expires, turning on the standard circuitry of the integrated circuit.

15. A power down system for an integrated circuit that enables a power down mode to be maintained for a predetermined time; said integrated circuit including standard circuitry; said power down system comprising:

an oscillator;

a low power oscillator; and

an oscillator control circuit controlling both said oscillator and said low power oscillator; said oscillator control circuit including a real time counter; said oscillator control circuit being so configured that:

said oscillator is energized when said oscillator control circuit is in a normal mode;

when a measurement of an oscillation frequency of said low power oscillator is required, the standard circuitry of the integrated circuit is turned off;

when a power down signal is received: a) said oscillator control circuit uses the measured oscillation frequency of said low power oscillator to set said real time counter so as to maintain the power down mode for the predetermined time, and b) said oscillator control circuit turns off said oscillator and uses said low power oscillator for the duration of the power down.

16. The power down system recited in claim 15, wherein said oscillator is a crystal oscillator.

17. The power down system recited in claim 15, wherein said low power oscillator is selected from the group consisting of relaxation oscillators, ring oscillators and RC oscillators.

18. The power down system recited in claim 15, wherein said low power oscillator includes a Schmitt trigger oscillator.

19. The power down system recited in claim 15, wherein said oscillator control circuit is so configured that a measurement of an oscillation frequency of said low power oscillator is required when the integrated circuit is reset.

20. The power down system recited in claim 15, wherein said oscillator control circuit is so configured that a measurement of an oscillation frequency of said low power oscillator is required when environmental changes occur.

21. The power down system recited in claim 15, wherein said oscillator control circuit further includes a second real time counter; and

wherein, when a power down signal is received, said oscillator control circuit sets said second real time counter using the measured oscillation frequency of the low power oscillator so that said oscillator control circuit may turn on the oscillator before the power down is terminated to allow an oscillation frequency of said oscillator to stabilize.

22. A power down method for an integrated circuit that enables a power down mode to be maintained for a predetermined duration; said integrated circuit including standard circuitry, an oscillator, a low power oscillator and an oscillator control circuit having a real time counter and controlling both the oscillator and the low power oscillator; said power down method comprising:

receiving a power down signal;

when predetermined conditions are met, shutting down the standard circuitry; measuring an oscillation frequency of the low power oscillator; powering up the standard circuitry;

setting the real time counter as a function of the measured oscillation frequency of the low power oscillator so as to maintain the power down mode for the predetermined duration; and

turning off the oscillation of the oscillator and shutting down the standard circuitry for the duration of the power down mode, as determined by the real time counter.

23. The power down method recited in claim 22, wherein predetermined conditions include a modification of environmental conditions of the integrated circuit.

24. The power down method recited in claim 22, wherein predetermined conditions include a reception of a reset signal.

25. The power down method recited in claim 22, wherein the oscillator control circuit includes a second real time counter; said method including :

setting the second real time counter using the oscillation frequency of the low power oscillator to a duration shorter that the predetermined duration of the down time;

when the shorter duration expires, turning on the oscillator of the integrated circuit to allow an oscillation frequency thereof to stabilize;

when the predetermined down time duration expires, turning on the standard circuitry of the integrated circuit.